

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 January 2002 (10.01.2002)

PCT

(10) International Publication Number
WO 02/03041 A1

(51) International Patent Classification⁷: **G01H 1/00**

(21) International Application Number: **PCT/GB01/03020**

(22) International Filing Date: 5 July 2001 (05.07.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0016561.3 5 July 2000 (05.07.2000) GB

(71) Applicant (*for all designated States except US*): **ROLLS-ROYCE PLC** [GB/GB]; 65 Buckingham Gate, London, Greater London SW1E 6AT (GB).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **ANUZIS, Paul** [GB/GB]; 86 Locko Road, Spondon, Derby, Derbyshire DE21 7AR (GB). **KING, Steve, P.** [GB/GB]; 30 Willow Drive, Newhall, Swadlincote, Derbyshire DE11 0NW (GB). **KING, Dennis, M.** [GB/GB]; 94 Western

Road, Mickleover, Derby, Derbyshire DE3 5GQ (GB). **TARASSENKO, Lionel** [GB/GB]; 68 Old Road, Headington, Oxford, Oxfordshire OX3 7LP (GB). **HAYTON, Paul** [GB/GB]; 1 Langford Cottages, London Road, Bicester, Oxfordshire OX6 0JN (GB). **UTETE, Simukai** [ZW/GB]; c/o St. Hugh's College, Oxford, Oxfordshire OX2 6LE (GB).

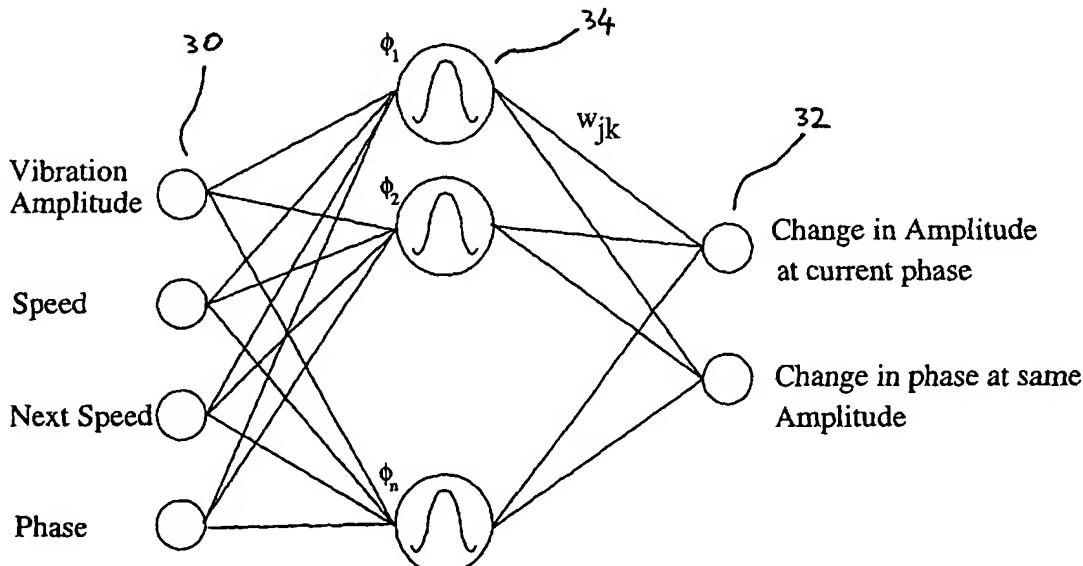
(74) Agents: **ARMITAGE, Ian, A. et al.**; Mewburn Ellis, York House, 23 Kingsway, London, Greater London WC2B 6HP (GB).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European

[Continued on next page]

(54) Title: MONITORING THE HEALTH OF A POWER PLANT



WO 02/03041 A1

(57) Abstract: A method for monitoring the health of a system comprises performing at each of a plurality of times the steps of: constructing a condition signature (30) from a plurality of condition indicators including (a) a plurality of vibration measurements acquired from the system or (b) one or more vibration measurements and one or more performance parameter measurements acquired from the system; predicting a normal signature (32) from a model defining one or more inter-dependencies between said condition indicators, the normal signature corresponding to the condition signature for a healthy system; comparing the condition signature with the normal signature; and registering an event if the condition signature differs from the normal signature by more than a predetermined threshold.